WHAT IS CLAIMED IS:

1. An imaging composition comprising:

a semiconductor nanocrystal having an outer layer bonded to the nanocrystal.

2. The composition of claim 1, wherein the semiconductor nanocrystal has a diameter of between 5 nm and 10 nm.

3. The composition of claim 1, wherein the outer layer includes a polydentate ligand.

4. The composition of claim 1, wherein the nanocrystal emits light having a wavelength greater than 700 nm.

5. The composition of claim 1, wherein the nanocrystal includes a core of a first semiconductor material and an overcoating of a second semiconductor material on the core wherein the first semiconductor material and the second semiconductor material are selected so that, upon excitation, one carrier is substantially confined to the core and the other carrier is substantially confined to the overcoating.

6. The composition of claim 1, wherein the semiconductor nanocrystal includes a core of a first semiconductor material.

7. The composition of claim 6, wherein the first semiconductor material is a Group II-VI compound, a Group II-V compound, a Group III-VI compound, a Group III-V compound, a Group IV-VI compound, a Group I-III-VI compound, a Group II-IV-VI compound, or a Group II-IV-V compound.

8. The composition of claim 6, wherein the first semiconductor material is ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, AlN, AlP, AlAs, AlSb, GaN, GaP, GaAs, GaSb, GaSe, InN, InP, InAs, InSb, TlN, TlP, TlAs, TlSb, PbS, PbSe, PbTe, or mixtures thereof.

9. The composition of claim 6, wherein the semiconductor nanocrystal includes a second semiconductor material overcoated on the first semiconductor material.

10. The composition of claim 9, wherein the first semiconductor material has a first band gap, and the second semiconductor material has a second band gap that is larger than the first band gap.

11. The composition of claim 9, wherein the second semiconductor material is a Group II-VI compound, a Group II-V compound, a Group III-VI compound, a Group III-V compound, a Group IV-VI compound, a Group I-III-VI compound, a Group II-IV-VI compound, or a Group II-IV-V compound.

12. The composition of claim 9, wherein the second semiconductor material is ZnO, ZnS, ZnSe, ZnTe, CdO, CdS, CdSe, CdTe, MgO, MgS, MgSe, MgTe, HgO, HgS, HgSe, HgTe, AlN, AlP, AlAs, AlSb, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, TlN, TlP, TlAs, TlSb, TlSb, PbS, PbSe, PbTe, or mixtures thereof.

13. A method of imaging tissue comprising:

introducing a composition including a semiconductor nanocrystal into the tissue; and

detecting emission from the semiconductor nanocrystal.

14. The method of claim 13, wherein the tissue is vasculature.

15. The method of claim 13, wherein the emission is in the near-infrared (NIR) or infrared wavelength region.

16. The method of claim 13, wherein introducing the composition includes injecting the composition into a body.

17. The method of claim 13, wherein introducing the composition includes injecting the composition into a vascular system of a body.

18. The method of claim 17, wherein detecting emission includes monitoring tissue or tumor vascular during surgery, monitoring body sites of bleeding during surgery, or monitoring tissue perfusion during surgery and surgical repairs.

19. The method of claim 13, wherein the semiconductor nanocrystal has a diameter of between 5 nm and 10 nm.

20. The method of claim 13, wherein the semiconductor nanocrystal has a diameter of between 5 nm and 10 nm.

21. The method of claim 13, further comprising exposing the tissue to white light.

22. The method of claim 13, wherein the nanocrystal emits light having a wavelength greater than 700 nm.

23. The method of claim 13, wherein the nanocrystal includes a core of a first semiconductor material and an overcoating of a second semiconductor material on the core wherein the first semiconductor material and the second semiconductor material are selected so that, upon excitation, one carrier is substantially confined to the core and the other carrier is substantially confined to the overcoating.